REMARKS

Review and reconsideration on the merits are requested.

Applicants initially turn to the rejections under 35 U.S.C. §112, second paragraph.

With respect to the claims where "magnetoplumbite-type" is used, the Examiner taking the position that "type" renders the claims indefinite, this terminology is canceled in the following claims: claims 14, 25, and 37.

With respect to the method step of claim 37 being separated by a line indentation, this is done.

Withdrawal is requested.

Paragraph 4

With respect to the rejection of claims 14-18 and 21-22 under the judicially created doctrine of double patenting over claims 1-4 of U.S. Patent No. 5,958,284, Applicants file herewith a Terminal Disclaimer. Assuming that the Examiner is correct that the patent claims encompass the claimed magnetic composition, at best that would create the basis for an obviousness-type double patenting rejection, not a true double patenting rejection. With reference to independent claims 1 and 3 of the '284 patent, and not attempting to be all inclusive, it is easily seen that the claims herein differ in scope therefrom in calling for the possibility of Zn, the first condition relating to x in the claims herein differing therefrom, the lower value for the second condition herein (2.6) differing from the claims therein and the lower value for the claims herein (5.0) differing from the claims therein.

Withdrawal is requested.

Prior art considered: JP 09-115,715 (JP '715); WO 98/38,654 (WO '654).

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Applicants appreciate the Examiner indicating that claim 37 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. § 112, second paragraph, and that claims 38, 39 and 42-45 would be allowable if rewritten to overcome the same rejection(s) and to include all of the limitations of the base claim and any intervening claims.

The rejections: claims 14-17 and 21-25 under 35 U.S.C. § 102(b) as anticipated by JP '715 and claims 14-18 and 21-26 under 35 U.S.C. § 102(b) as anticipated by WO '654.

The rejection of these claims is respectfully traversed.

Detailed Traversal

The Invention

The present invention provides a ferrite magnet having a basic composition represented by the following general formula:

$(A_{1-x}R_x)O \cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio,

wherein A is Sr and/or Ba, R is at least one of the rare earth elements including Y, M is at least one element selected from the group consisting of Co, Mn, Ni and Zn, and x, y and n are numbers meeting the following conditions:

$0.01 \leq x \leq 0.4$

$[x/(2.6n)] \leq y \leq [x/(1.6n)]$, and

$5 \leq n \leq 6$,

which has a substantially magnetoplumbite crystal structure, the R clement and/or the M element being added in the form of a compound either at a pulverizing step after calcination or both at a

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mixing step before calcination and at a pulverization step after calcination (see page 7, line 22 to page 8, line 23 of the specification).

Since Applicants believe that establishing the patentability of claim 14 will establish the patentability of remaining claims, they only discuss claim 14.

JP '715

In distinction, JP '715 discloses a magnetic powder having a hexagonal magnetoplumbite ferrite main phase represented by the following general formula:

$(A_{1-x}R_x)(Fe_{12-y}M_y)_zO_{19}$,

wherein A is at least one element selected from the group consisting of Sr, Ba, Ca and Pb, R is at least one element selected from the group consisting of the rare earth elements (including Y) and Bi, La being an indispensable element, M is at least one element selected from the group consisting of Zn and Cd, and x, y and z are molar ratios meeting the following conditions:

$0.04 \leq x \leq 0.45$,

$0.04 \leq y \leq 0.45$, and

$0.7 \leq z \leq 1.2$ (see the English translation of claim 1 and the English abstract of JP '715 attached hereto).

In JP '715, the above general formula $(A_{1-x}R_x)(Fe_{12-y}M_y)_zO_{19}$ can be expressed by the formula $(A_{1-x}R_x)O \cdot 6z(Fe_{2-y'}M_{y'})O_3$, that is, $(A_{1-x}R_x)O \cdot 6z[(Fe_{1-y'/2}M_{y'/2})_2O_3]$, in which $y' = y/6$ and $(0.0033 \leq y'/2 \leq 0.0375)$.

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Thus, JP '715 teaches a ferrite magnetic powder with a hexagonal magnetoplumbite main phase having a basic composition represented by the formula $(A_{1-x}R_x)\ O{\cdot}6z\ [(Fe_{1-y'/2}M_{y'/2})_2O_3]$, in which $0.0033 \leq y'/2 \leq 0.0375$ and $4.2 \leq 6z \leq 7.2$). However, JP '715 is completely silent regarding Co as the M element, though JP '715 discloses Sr as the A element and La as the R element. In this regard, the use of Co as the M element ensures important effects on the magnetic properties of the ferrite to improve coercivity (iHc), that is, the coercivity tends to remarkably increase as the amounts of Co compound added increase (see page 48, Table 3 and, page 49, lines 5-10 (EXAMPLE 15) of the specification). Further, JP '715 fails to teach the influence of the addition time of the R element and/or the M element to achieve the desired magnetic properties of the resultant sintered ferrite magnets.

Quite clearly, one of ordinary skill in the art considering the teaching of JP '715 would not be motivated to reach the invention recited in claim 14, and, accordingly, claim 14 is not anticipated by nor rendered obvious by JP '715.

With respect to the dependent claims, namely claims 15-17 and 21-24, also rejected over JP '715, it is believed that the patentability of such claims is clear from the above discussion regarding 14.

WO '654

WO '654 discloses an oxide magnetic material comprising a main phase of ferrite with a hexagonal structure which is a composition containing A, R, Fe, and M, wherein:

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A is at least one element selected from the group consisting of strontium, barium, calcium and lead, with strontium being essentially contained in A;

R is at least one element selected from the group consisting of bismuth and rare earth elements inclusive of yttrium, with lanthanum being essentially contained in R; and

M is cobalt or cobalt and zinc,

where the proportions in total of the respective elements relative to the quantity of the entire metal elements are

A: 1 to 13 at %,

R: 0.05 to 10 at %,

Fe: 80 to 95 at %, and

M: 0.5 to 3 at % (emphasis added) (see claim 1 of WO '654).

The above oxide magnetic material of WO '654 can be expressed by the following general formula:

$A_{1-x}R_x(Fe_{12-y}M_y)_zO_{19}$

wherein, $0.04 \leq x \leq 0.9$

$0.04 \leq y \leq 0.5$,

$0.8 \leq x/y \leq 20$, and

$0.7 \leq z \leq 1.2$ (see claim 5 of WO '654

As is the case with JP '715, the above general formula from WO '654 can be expressed by the formula $(A_{1-x}R_x)O\cdot 6z[(Fe_{1-y'/2}M_{y'/2})_2O_3]$, in which $0.0033 \leq y'/2 \leq 0.0375$ and $4.2 \leq 6z \leq 7.2$). Here, the variables y'/2 and 6z correspond to numbers y and n of the present invention (please see the formulae below).

Since the composition of the ferrite powder of the present invention having the formula $(A_{1-x}R_x)O\cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio,

wherein A is Sr and/or Ba, R is at least one rare earth element including Y, M is at least one element selected from the group consisting of Co, Mn, Ni and Zn, and x, y and n are numbers meeting the following conditions:

$0.0\ 1 \leq x \leq 0.4$,

$[x/(2.6n)] \leq y \leq [x/(1.6n)]$, and

$5 \leq n \leq 6$,

overlaps with that disclosed in the oxide magnetic material shown by formula I of WO '654, Applicants submit herewith certified English translations of the present applications priority documents.

Basis occurs for the claims of the present application therein as follows.

Claim 14 herein

JP 10-193662 discloses a ferrite magnet having a basic composition represented by the following general formula:

$(A_{1-x}R_x)O \cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio,

wherein A is at least one of Sr and Ba, R is at least one rare earth element including Y, at least one element selected from the group consisting of Nr, Pr and Ce being an indispensable element, M is at least one element selected from the group consisting of Mn, Co, Ni and Zn, and x, y and n are numbers meeting the following conditions:

$0.01 \leq x \leq 0.4$,

$[x/(2.6n)] \leq y \leq [x/(1.6n)]$, and

$5 \leq n \leq 6$.

The ferrite magnet substantially has a magnetoplumbite-type crystal structure. See claim 5 of JP '662.

For the ultimate language in claim 14, see JP '662 in the paragraph bridging pages 14/15.

Example 10 of JP '662 involves the case of the basic composition of the ferrite magnet represented by the following formula:

$(Sr_{1-x}La_x)O \cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio, wherein $M = Co_{1-z}Zn_z$, and

wherein $n = 5.85$, $x = 2ny$, $x = 0.15$ and $z = 0.05$, i.e., $y = 0.013$ ($x/y = 11.5$).

Example 15 of JP '662 involves the case of the basic composition of the ferrite magnet represented by the following formula:

$(Sr_{1-x}Nd_x)O \cdot n[(Fe_{1-y}Zn_y)_2O_3]$ by atomic ratio,

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wherein n = 5.85, x = 2ny and x = 0.117, i.e., y=0.01 (x/y= 11.7).

JP '552 and '998 are also relevant

JP 9-358552 discloses a ferrite magnet having a basic composition represented by the following general formula:

$(A_{1-x}R_x)O \cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio,

wherein A is at least one of Sr and Ba, R is at least one element selected from the group consisting of La, Nd and Pr, La being an indispensable element, M is at least one element selected from the group consisting of Mn, Co and Ni, and x, y and n are numbers meeting the following conditions:

$0.05 \leq x \leq 0.5$,

$[x/(2.4n)] \leq y \leq [x/(1.6n)]$, and

$5.4 \leq n \leq 6.0$ (see claim 1).

Example 3 of JP '552 involves the case of the basic composition of the ferrite magnet represented by the following formula:

$(Sr_{1-x}La_x)O \cdot n[(Fe_{1-y}Co_y)_2O_3]$ by atomic ratio,

wherein n = 6.0, y = 0.77-1.43 x 10^{-2}, and x = 0.15 ($0.19 \leq x/y \leq 13.3$).

JP '552 also discloses a ferrite magnet having a basic composition represented by the following general formula:

$(A_{1-x}R_x)O \cdot n[(Fe_{1-y}Co_y)_2O_3]$ by atomic ratio,

wherein A is at least one of Sr and Ba, R is at least one element selected from the group consisting of La, Nd and Pr, La being an indispensable element, M is at least two elements selected from the group consisting of Mn, Co, Ni and Zn, Co being an indispensable element, and x, y and n are numbers meeting the following conditions:

$0.05 \leq x \leq 0.5$,

$[x/(2.4n)] \leq y \leq [x/(1.6n)]$, and

$5.4 \leq n \leq 6.0$ (see claim 3).

Example 4 of JR 552 involves the case of the basic composition of the ferrite magnet represented by the following formula:

$(Sr_{1-x}La_x)O \cdot n[(Fe_{1-y}Zn_y)_2O_3]$ by atomic ratio,

wherein $n = 5.85$, $x = 2ny$ and $x = 0.117$, i.e., $y = 0.01$ ($x/y = 11/7$).

JP 10-73998 discloses a method for producing a ferrite magnet having a basic composition represented by the following general formula:

$(A_{1-x}R_x)O \cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio,

wherein A is at least one of Sr and Ba, R is at least one element consisting of La, Nd and Pr, La being an indispensable element, M is at least one element selected from the group consisting of Mn, Co, Ni and Zn, and x, y and n are numbers meeting the following conditions:

$0.05 \leq x \leq 0.5$,

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$[x/(2.4n)] \leq y \leq [x/(1.6n)]$, and

$5.4 \leq n \leq 6.0$.

The method uses a hydroxide, a carbonate or a salt of organic acid of La as a raw material for supplying La (see claim 1).

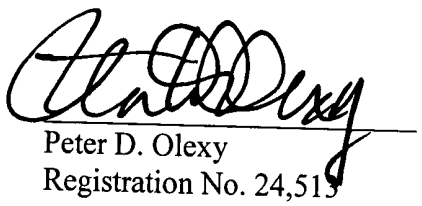
Example 1 of JP '998 involves the case of thc basic composition of the ferrite magnet represented by the following formula:

$(Sr_{1-x}La_x)O \cdot n[(Fe_{1-y}Co_y)_2O_3]$ by atomic ratio,

wherein $n = 5.9$, $x = 2ny$ and $x = 0.15$, i.e., $y = 0.013$ ($x/y = 11.5$).

Withdrawal of the rejection over WO '654 is respectfully requested.

Respectfully submitted,



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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

IN THE CLAIMS:

The claims are amended as follows:

14. (Amended) A ferrite magnet having a basic composition represented by the following general formula:

$(A_{1-x}R_x)O \cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio,

wherein A is Sr and/or Ba, R is at least one [of] rare earth [elements]element including Y, M is at least one element selected from the group consisting of Co, Mn, Ni and Zn,, and x, y and n are numbers meeting the following conditions:

$0.01 \leq x \leq 0.4$,

$[x/(2.6n)] \leq y \leq [x/6.1n)]$, and

$5 \leq n \leq 6$,

said ferrite magnet substantially having a magnetoplumbite[-type] crystal structure, the R element and/or the M element being added in the form of a compound both at a mixing step before calcination and at a pulverization step after calcination.

25. (Amended) The ferrite magnet according to claim 14, wherein the concentration of said R element is higher in crystal grain boundaries than in said magnetoplumbite[-type] crystal grains.

37. (Amended) A method for producing a ferrite magnet having a basic composition represented by the following general formula:

$(A_{1-x}R_x)O \cdot n[(Fe_{1-y}M_y)_2O_3]$ by atomic ratio,

wherein A is Sr and/or Ba, R is at least one [of] rare earth [elements]element including Y, M is at least one element selected from the group consisting of Co, Mn, Ni and Zn, and x, y and n are numbers meeting the following conditions:

$0.01 \leq x \leq 0.4$,

$[x/(2.6n)] \leq y \leq [x/(1.6n)]$, and

$5 \leq n \leq 6$,

said ferrite magnet substantially having a magnetoplumbite[-type] crystal structure, said method comprising the steps of adding a compound of the R element and/or the M element at a percentage of more than 0 atomic % and 80 atomic % or less, on an element basis, at a step of uniformly mixing a compound of Sr and/or Ba with an iron compound;

calcining the resultant uniform mixture;

adding the remaining amount of said compound of the R element and/or the M element to the resultant calcined powder at a pulverization step thereof; and

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sintering the resultant mixture.

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